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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/808,947

03/25/2004

Takeshi Ohashi

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William S. Frommer, Esq.  
FROMMER LAWRENCE & HAUG LLP  
745 Fifth Avenue  
New York, NY 10151

EXAMINER

SUN, XIUQIN

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/808,947	<b>Applicant(s)</b> OHASHI ET AL.	
	<b>Examiner</b> Xiuqin Sun	<b>Art Unit</b> 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pike (U.S. Pat. No. 5311286) in view of Aagaard et al. (U.S. Pub. No. 20030210329) and Allard (U.S. Pat. No. 6535793).

Regarding claim 1, Pike teaches a device mounted on an apparatus comprising: a flat surface portion on which texture for stereo camera diagnosis is provided (col. 4, lines 62-64); an attitude unit that causes said apparatus placed on a diagnostic mat to assume a stance suitable for taking an image of the diagnostic mat (col. 5, lines 44-47); a creation unit adapted to create a distance image based on the image obtained by said stereo camera (col. 7, lines 39-43); an image detection unit adapted to detect the flat face of said diagnostic mat from said created distance image (col. 7, lines 43-58).

Pike does not mention: a measurement unit adapted to measure the flatness of said detected flat face, and verifying the performance of a stereo camera according to whether or not the flatness is greater than a standard flatness; wherein when the measured flatness of the detected flat face meets at least the standard flatness, performance of the diagnosing device is determined to be sufficient and a determination is made that a calibration is unnecessary, and

wherein when the measured flatness of the detected flat face is below the standard flatness, performance of the diagnosing device is determined to be insufficient and a determination is made that a calibration is necessary.

Aagaard et al. teach a technique for robot-mounted stereo camera calibration, including: a measurement unit adapted to measure the flatness of a detected flat face, and verifying the performance of a stereo camera according to whether or not the flatness is greater than a standard flatness (sections 0008, 0110-0113 and 0121). Aagaard et al. further teach: wherein when the measured flatness of the detected flat face meets at least the standard flatness, performance of the diagnosing device is determined to be sufficient and a determination is made that a calibration is unnecessary, and wherein when the measured flatness of the detected flat face is below the standard flatness, performance of the diagnosing device is determined to be insufficient and a determination is made that a calibration is necessary (sections 0111, 0116, 0120 and 0124).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teaching of Pike with the teaching of Aagaard et al. in order to provide a calibration technique for a stereo camera that is capable of calibrating the stereo camera based on the texture information of a target surface (Aagaard et al., section 0121).

Allard teaches a method and system for remote control of mobile robot (Abstract; Fig. 1), wherein said robot includes a ground-contact portion (110, 160) for contact with a floor face (col. 3, lines 34-50), and wherein an indicator (310) indicates a place on a

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surface portion where said ground-contact portion of said robot is placed (Figs. 11-14; cols. 9-10, lines 49-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Allard in the invention of Pike in order to facilitate the user in controlling the movement and operation of the mobile robot (Allard, Abstract).

3. Claims 3, 5, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pike in view of Aagaard et al. and Allard, as applied to claim 1 above, and further in view of Song et al. (U.S. Pat. No. 6841963).

Pike in view of Aagaard et al. and Allard teach the device that includes the subject matter discussed above except: regarding claim 3, wherein said robot includes one or more mobile legs including a foot; and wherein said indicator indicates a place on said surface portion where the soles of feet of said robot are placed; regarding claim 5, said surface portion includes texture within a template, which can correctly perform matching on an epipolar line in the event of a stereo camera system using template matching; regarding claim 6, said surface portion includes texture which allows avoiding mismatching in diagnosis and calibration; regarding claim 8, said surface portion includes calibration patterns of which geometrical shape is known.

Song et al. teach a robot system, including: said robot includes one or more mobile legs including a foot (col. 1, lines 49-51; col. 5, lines 23-37); and an indicator indicates a place on a surface portion where the soles of feet of said robot are placed (col. 4, lines 3-24; col. 8, lines 12-23); said surface portion includes texture within a template, which can correctly perform

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matching on an epipolar line in the event of a stereo camera system using template matching (Figs. 6a-6d; cols. 4-5, lines 60-19); said surface portion includes texture which allows avoiding mismatching in diagnosis and calibration (Figs. 6a-6d); said surface portion includes calibration patterns of which geometrical shape is known (col. 6, lines 59-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Song et al. into the combination of Pike, Aagaard et al. and Allard in order to make the stereo camera calibration technique taught by the of Pike and Aagaard et al. applicable to a robot that can walk around in a work area (Song et al. Abstract). The mere application of a known technique to a specific instance by those skilled in the art would have been obvious.

4. Claim 4 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Pike in view of Aagaard et al. and Allard, as applied to claim 1 above, and further in view of Tusques (U. S. Pat. No. 5384431).

Pike in view of Aagaard et al. and Allard teach the device that includes the subject matter discussed above except: said device has a folding structure, which becomes a flat shape exposing said surface portion at the time of unfolding said folding structure.

Tusques discloses a structure for mounting a camera to a robotic device, including a folding structure that becomes a flat shape exposing a surface portion, on which the automatic equipment is disposed, at the time of unfolding said folding structure (Fig. 7; cols. 4-5, lines 61-6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Tusques into the combination of Pike in

view of Aagaard et al. and Allard in order to provide a flexible structure for mounting a camera on a robot (Tusques, col. 1, lines 16-36).

5. Claim 7 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Pike in view of Aagaard et al. and Allard, as applied to claim 1 above, and further in view of Peless et al. (U. S. Pat. No. 6850024).

Pike in view of Aagaard et al. and Allard teach the device that includes the subject matter discussed above except said surface portion has patterns shaded in uniform texture.

Peless et al. disclose a robot, including a surface portion having patterns shaded in uniform texture (col. 6, lines 18-29; col. 7, lines 45-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Peless et al. into the combination of Pike, Aagaard et al. and Allard in order to provide markers that can be used to increase the precision of the calibration of the robot system (Peless et al., col. 7, lines 45-55).

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1 and 3-8 have been considered but they are not persuasive.

Claims 1 and 3-8 are rejected as new grounds have been found from the Aagaard reference (U.S. Pub. No. 20030210329) to teach the limitations newly added in the amended claim 1. Detailed response is given in section 2 as set forth above in this Office Action. Applicant's arguments with respect to claim 1 are therefore moot in view of the new ground(s) of rejection.

### ***Contact Information***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (571)272-2280. The examiner can normally be reached on 6:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571)272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

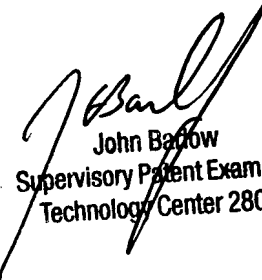
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications



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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

XS   
September 20, 2007

  
John Badow  
Supervisory Patent Examiner  
Technology Center 2800